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Transmitted herewith for filing is the patent application of
INVENTOR OR APPLICATION IDENTIFIER: Jung Min Song and Jin Soo Lee
TITLE: VIDEO BROWSER BASED ON CHARACTER RELATION

Enclosed are:

- 1. [X] 24 pages of specification, claims, abstract
- 2. [X] 7 sheets of FORMAL drawing.
- 3. [X] 2 pages of newly executed Declaration & Power of Attorney (original).
- 4. [X] Priority Claimed to Korean Appln. No.35688/1999 filed on August 26, 1999, whose entire disclosure is incorporated herein by reference.
- 5. [] Small Entity Statement.
- 6. [] Information Disclosure Statement, Form PTO-1449 and reference.
- 10. [X] Authorization under 37 C.F.R. §1.136(a)(3).
- 11. [] Other:
- 7. [X] Assignment Papers for LG Electronics Inc (cover sheet, assignment & assignment fee).
- 8. [X] Certified copy of Korean Patent Application No. 35688/1999 filed on August 26, 1999.
- 9. [X] Two (2) return postcards.
[X] Stamp & Return with Courier.
[X] Prepaid Postcard-Stamped Filing Date & Returned with Unofficial Serial Number.

CLAIMS AS FILED					
For	No. Filed		No. Extra	Rate	Fee
Total Claims	20	- 20	0	X \$18.00	\$0.00
Indep. Claims	3	- 3	0	X \$78.00	\$0.00
Multiple Dependent Claims (If applicable)				X \$260.00	\$0.00
BASIC FEE					\$690.00
TOTAL FILING FEE					\$690.00

[] This is a Continuation-in-part (CIP) of prior application No: _____ filed _____. Incorporation By Reference-The entire disclosure of the prior application is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

[] Amend the specification by inserting before the first line the sentence:

--This application is a continuation-in-part of Application Serial No. _____ filed _____.--

- [X] A check in the amount of \$690.00 Check # 9289 is attached.
- [] Please charge my Deposit Account No. 16-0607 in the amount of \$_. A duplicate copy of this sheet is enclosed.
- [X] The Commissioner is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 16-0607. A duplicate copy is enclosed.
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- [X] The Commissioner is hereby authorized to charge payment of following fees during the pendency of this application or credit any overpayment to Deposit Account No. 16-0607. A duplicate copy of this sheet is enclosed.
- [X] Any patent application processing fees under 37 C.F.R. 1.17.
- [X] Any filing fees under 37 C.F.R. 1.16 for presentation of extra claims.

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Date: August 25, 2000

VIDEO BROWSER BASED ON CHARACTER RELATION

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a video browser, and more particularly to a video browser for browsing a video based on relations between characters.

Background of the Related Art

Typically, users simply view movies and/or dramas as broadcasted through a TV or played at a movie theater. However, a user may wish to view a particular movie or drama at a particular time, or wish to view only a particular section of a movie or a drama. Accordingly, various techniques which enables a selective watching of a movie/drama or sections of a movie/drama have been suggested.

In the related art, for example, various video data may be represented or classified into format chunk, index chunk, media chunk, segment chunk, target chunk, and/or representation chunk. Also, data on various characters or objects such as a name of an object, position on the screen, numeric data with relation to a segment of the video data in which the object appears, may be represented by the target and representation chunk. Accordingly, a user can select an object through a table and reproduce for display a particular segment where the object is shown in the video.

In another related art, various additional data of a video

data are obtained before, during or after the production of the video data. Thereafter, an additional information table of the obtained data is composed and provided to users. Namely, the additional data table may include a position where an actor appears, a position where a character of the actor appears, and a position where stage properties appear, such that a scene can be reproduced as selected by a user through the additional data table. For example, if a user selects a stage property, information on the selected stage property such as the manufacturer and price may be displayed on a screen, and the user may be able connect with the manufacturer or a seller of the stage property through a network connection.

In still another related art, recording information on each segment of a video in a video map has been suggested. That is, information such as the degree of violence, the degree of adult contents, the degree of importance of contents, characters positions, and the degree of difficulty in understanding may be indicated for each segment of a video in the video map. Thus, the user may set a degree of preference for one or more items of the video map, and only segments of the video meeting the set degree of preference would be reproduced, thereby limiting a display of particular contents to unauthorized viewers.

Similarly, other techniques in the related art as described above provide items simply arranged without any relation to the objects appearing in the movie or drama, based upon the selection of the user. However, the contents of a movie or drama generally

builds around relations between characters, places and events. For example, relations between characters may not change from beginning to the end of the story or may continuously vary. Moreover, since one or more characters relate to a specific character in the movie or drama, the browsing method in the related art substantially fails to provide an accurate understanding of the story of the movie or drama to the user.

Therefore, techniques in the related arts have disadvantages in that it is difficult to understand a video centering on relations among characters according to the development of events, changes of relations, and relations among characters and places as events develop.

SUMMARY OF THE INVENTION

Accordingly, an object of the present invention is to solve at least the problems and disadvantages of the related art.

Another object of the present invention is to provide a video browser in which event segments showing changes in relations between characters are summarized and displayed based on a video data structure which includes characters in a video that significantly act on development of an event, and includes a constant and variable relations between characters.

A still another object of the present invention is to provide a video browser in which main events that significantly act on variable relations between characters are connected with corresponding variable relations based on a video data structure

which includes characters in a video that significantly act on development of an event, and includes a constant and variable relations between characters.

5 A further object of the present invention is to provide a video browser in which a key frame of event segments which show a corresponding relation between characters is displayed based on a video data structure which includes characters in a video that significantly act on development of an event, and includes a constant and variable relations between characters.

10 A further object of the present invention is to provide a video browser in which a constant relation and changes in relations between characters are displayed depending on preset relation types based on a video data structure which includes characters in a video that significantly act on development of an event, and includes a constant and variable relations between characters.

15 Additional advantages, objects, and features of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of the invention. The objects and advantages of the invention may be realized and attained as particularly pointed out in the appended claims.

20 To achieve the objects and in accordance with the purposes of the invention, as embodied and broadly described herein, a video browsing system for browsing a video based on a data

structure in which a constant and variable relations between characters of a video are connected with characters and corresponding event segments, comprises (a) browsing and displaying a video segment showing a constant relation between characters and variable relations between characters based on an event segment showing a corresponding constant relation and variable relation, and (b) displaying a video segment of a corresponding event segment in response to a user's selection.

The video browser of the present invention is characterized in that event segments showing a constant relation between characters and changes in the relations is summarized and displayed. Also, main events that significantly act on variable relations are connected with corresponding variable relations and characters.

Moreover, the video browser of the present invention is characterized in that constant relation and variable relation between the characters are browsed and displayed as a constant relation and a variable relation between characters selected by the user. The constant relation and variable relation between characters may also be browsed and displayed as a constant relation and a variable relation between every characters related with a selected character.

In still another video browser of the present invention, the constant relation and variable relation between characters are displayed in a tree structure. The video browser of the present invention may display a constant relation and variable relation

between characters depending on preset relation types. The relation types may be set in semantic types such as 'family relation,' 'business relation,' and 'social relation.'

Furthermore, the video browser of the present invention is characterized in that event segments showing constant relation and variable relation between characters is displayed as a key frame. Finally, the key frame may shows a corresponding relation between characters.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be described in detail with reference to the following drawings in which like reference numerals refer to like elements wherein:

Fig. 1 shows an example of a video data structure based on character relation according to the present invention;

Fig. 2 shows an example of a video data structure in which events showing character relations are summarized in accordance to the present invention;

Fig. 3 shows a video browser based on the video data structure of Fig. 2;

Fig. 4 shows a video data structure of an event segment showing variable relations between characters;

Fig. 5 shows a video browser based on the data structure of Fig. 4 in accordance with the present invention;

Fig. 6 shows an example of a video browser according to the present invention; and

Fig. 7 shows another example of a video browser according to the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Reference will now be made in detail to the preferred
5 embodiments of the present invention, examples of which are illustrated in the accompanying drawings.

Fig. 1 shows a video data structure based on character relations in accordance with the present invention for a video browser based on content. A video browser based on content is disclosed in co-pending application 09/239,530, entitled "Motional Video Browsing Data Structure and Browsing Method Therefor," and is fully incorporated herein.

Referring to Fig. 1, a visual description scheme (DS) 101 is divided into a visualization DS 102, a syntactic structure DS 103, and a semantic structure DS 104. The visualization DS 102 is organized into a highlight view DS 105 for displaying a summarized data as a video highlight, and a key frame view DS 106 for displaying summarized data based on a key frame. Because, a video plot can be summarized briefly or with greater amounts of
20 detail, the highlight view DS 105 enables a display of multi-levels of summarized data with a level 107, a view type 108 and a time DS 109. Similarly, the key frame view DS 106 enables a display of multi-levels of summarized data with a level 110 and a time DS 111.

25 Namely, the highlight view DS 105 is organized into a level

107 which has multiple levels of highlight data based upon a degree of detail in summarizing a video. In such case, summary data in each level may include a corresponding period in the time DS 109 for use in highlight. The key frame view DS 106 is also
5 organized into a level 110 which has multiple levels of summarized data based upon a degree of detail. In such case, summary data in each level may include a corresponding period in the time DS 111 for use as a key frame.

10 The syntactic structure DS 103 is used for displaying the actual video and includes actual video segments to be displayed. The syntactic structure DS 103 is organized into actual video segments in segment DSs 112, and corresponding temporal positions of video segments in the time DS 113.

15 The semantic structure DS 104 includes additional information describing a video, and is organized into an event DS 114 including event information, an object DS 117 including object information, and an event/object relation graph DS 119 including information describing relations between objects and places, and corresponding events to the relations. Namely, the
20 event DS 114 describes events, and the object DS 117 describes objects such as characters and places. The event/object relation graph DS 119 describes a constant relation or changes in relation between characters, a relation between object and place, or a relation between object and event.

25 Here, a constant relation means either a relation between characters that cannot change throughout a video, such as a

patent to child relation, or a relation which is most representative of the relations between characters.

When an event is selected to display a video segment corresponding to the event, the event DS 114 of the semantic structure DS 104 is used. The event DS 114 is divided into a Reference to Segment 115 including information necessary for displaying a segment of a video corresponding to the selected event and an annotation DS 116 including information which connects events with actual positions of the events in a video and information for explaining events in a video. Particularly, the event DS 114 is used in displaying a selected event and connects the selected event with a position of the event in a video data through the Reference to Segment 115, and the contents of a selected event is annotated through the annotation DS 116.

The object DS 117 is organized into an object annotation DS 118 including information for describing objects such as characters or places. That is, the object DS 117 is used in displaying characters, and detailed information of the characters can be summarized or annotated through the annotation DS 118.

The event/object relation graph DS 119 includes information on a constant relation and variable relation between characters. The event/object relation graph DS 119 is organized into an entity relation 120 with a return which allows a display of character relations in a tree structure in which a relation may have subordinate relations. According to the present invention, constant relations between characters are placed in an upper

level of the tree while changes of relations between the characters are placed in a lower level of the tree.

The entity relation 212 is also divided into a relation 121, a Reference to Object 124, and a Reference to Event 125. The relation 121 is organized into a name 122 including information on the titles of relations, and a type 123 including information on the nature of relations. For example, a nature of relation may be 'family' and a title of relation may be 'spouse.' The Reference to Object 124 connects related characters with each other and the Reference to Event 125 connects events which shows particular relations.

In the above video data structure, the notation above each data such as {0,1}, {0,*}, or {1,*} indicates the number of data for the corresponding data. For example, the notation of {0,1} for the visualization DS 102 indicates that the visual DS 101 can have zero or one visualization DS. On the other hand, the notation of {0,*} for the segment DS 112 indicates that the syntactic structure DS 103 may have from zero to any number of segment DS.

Fig. 2 shows a method of using a data structure of Fig. 1 to easily understand and browse a video based on a relations between characters. Referring to Fig. 2, a representative relation (constant relation) between 'character 1' and 'character 2' is placed at the top of the tree structure, and variable relations (relation 1 ~ relation 4) between 'character 1' and 'character 2' are placed at the bottom of the tree structure.

Also, main events which are significant in a change of relation in a variable relation are placed between variable relations. The main events are summarized video data and are displayed by highlight data.

5 Here, the events are connected through the Reference to Event 125 in the entity relation 120 and the video segments are connected through the Reference to Segment 115 in the event DS 114. Thereafter, an actual video segment is displayed by connecting the time DS 113 of the segment DS 112 with the time
10 DS 109 of the level 107 in the highlight DS 105 of the visual DS 102.

Fig. 3 shows an example screen of a video browser based on the video data structure of Fig. 2. Referring to Fig. 3, 'character n' of a video is displayed on a character screen 301,
15 and a video is displayed on a main screen 302 according to a selection received through a user interface 303.

For example, if a user selects 'character 1' and 'character 3' from the character screen 301, main events which are significant in bringing about a change in the variable relations
20 between 'character 1' and 'character 3' can be browsed based on the data structures of Figs. 1 and 2. As a result, contents corresponding to the main events are summarized and displayed on the main screen 302.

Fig. 4 shows another method of using a video data structure
25 including information on variable relations of characters and main events significant in the variable relations.

Referring to Fig. 4, an representative relation (constant relation) between 'character 1' and 'character 2' is placed at a top of a tree structure, and variable relations (relation 1 ~ relation 4) between 'character 1' and 'character 2' are placed at the bottom of the tree structure. Main events (event 1 ~ event 3) which are significant in bringing about a change in the variable relations are placed between the variable relations. The method of Fig. 4 is realized in such a manner that a main event segment which brings a new relation is connected with the variable relations through the Reference to Event 125 of the entity relation 120.

Fig. 5 shows a video browser in accordance with the present invention based on the data structure of Fig. 4. Referring to Fig. 5, characters in a video are displayed on a character screen 501, and connection between variable relations and events are displayed on a character relation-variable event screen 502. Also, an event segment corresponding to a variable relation can be reproduced and displayed on a main screen 503.

For example, if a viewer selects 'character 1' and 'character 3,' variable relations between 'character 1' and 'character 3,' and main events which are significant in bringing about a change in the variable relation are respectively displayed on the screen 502. At this time, a relation or event may be displayed by an key frame or annotation. Also, a video segment corresponding to an event such as 'event 2' selected from the screen 502 is reproduced and displayed on the main screen

503.

Fig. 6 shows another example screen of a video browser according to the present invention. Referring to Fig. 6, main characters of a video are displayed on a character screen 601. Also, characters having relations with a character selected from the character screen 601, and a constant relation and variable relations between the selected character and related characters are displayed on a relation screen 602.

At this time, a constant relation between the selected character and a related character is displayed on the top of a relation tree structure while variable relations between the selected character and the related character is displayed on the bottom of the tree structure.

Furthermore, a key frame of events significant in both the constant relation and variable relations is displayed on a main scene screen 603. Here, key frames of event segment corresponding to a type(s) of event may be displayed on the main scene screen according to a user selection through a selection screen 604. Namely, key frames of main event segments which directly show a selected relation or key frames of secondary event segments which indirectly show the selected relation, or both can be displayed according to the user selection. For example, if a selected relation is a husband and wife, a main event segment may be a video segment of a marriage ceremony while a secondary event segment may be a video segment of third parties discussing the marriage ceremony.

An event segment corresponding to an event, for example a key frame, selected from the main scene screen 603 can thus be reproduced and displayed on the main screen 605.

For example, when a user selects 'character 1' from among the characters in the character screen 601, other characters 'character 2' ~ 'character 4' related with 'character 1' are displayed on the relation screen 602. If 'relation 2' with 'character 2' is selected from the relation screen 602, event segments corresponding to 'relation 2' with 'character 2' is displayed on the main scene screen 603 as key frames. Also, a period of a video corresponding to 'event 6' selected from the main scene screen 603 is reproduced and displayed on the main screen 605.

At this time, the video browser of Fig. 6 can be implemented by setting a relation type in the data structure of Fig. 1. In other words, events connected with a relation may vary depending on whether the type 123 of the relation 121 is the direct or indirect type as discussed above. Also, the events are connected through the Reference to Event 125 of the entity relation 120 and event segments are connected through the Reference to Segment 115 of the event DS 114. Thereafter, an actual video segment is displayed by connecting the time DS 113 of the segment DS 112 with the time DS 111 of the level 110 in the key frame view DS 106 of the visual DS 102.

Fig. 7 shows still another example screen of a video browser according to the present invention. Referring to Fig. 7,

characters of a video are displayed on a character screen 701;
and character having relations with a selected character, and a
constant relation and a variable relation between the selected
character and related characters are displayed on a relation
5 screen 702. Here, the constant and variable relations may
categorized into different natures of relations and relations
corresponding to a particular nature(s) of relation selected
through a selection screen 703 may be displayed in the relation
screen. The nature of relation may be a family relation, a
10 business relation, or a social relation.

Thus, a key frame of events significant in the selected
nature(s) of relation is displayed on a main scene screen 704.
A video segment corresponding to the selected relation and event
is reproduced and displayed on a main screen 705. For example,
15 when a user selects 'character 1' from characters displayed on
the character screen 701, characters ('character 2' ~ 'character
4') having a social relation with 'character 1' may be displayed
and an event segment of 'event 6' corresponding to 'social
relation 2' with 'character 2' can be reproduced and displayed
20 on the main screen 705.

As in Fig. 6, a constant relation between a selected
character and a related character is displayed on the top of a
relation tree structure while variable relations between the
selected character and the related character is displayed on the
25 bottom of the tree structure.

The video browser of Fig. 7 can be realized by setting a

relation type 123 of the relation data 121 in the data structure of Fig. 1. In other words, events related with the relation data 121 may vary depending on whether the relation type 123 of the relation data 121 is a 'family relation,' a 'business relation,' or a 'social relation.' As a result, browsing of Fig. 7 can be performed. At this time, the events are mutually connected through the reference to event 125 of the real relation 120. Segments are mutually connected through the reference to segment 115 of the event DS 114. Then, the time DS 113 of the segment DS 112 is connected with the time DS 111 of the level 107 displayed in the key frame DS 106 of the visual DS 102.

As aforementioned, the video browser based on a character relation according to the present invention has the following advantages. The event periods of the variable relation between the characters are summarized and displayed, and the main events concerned in the variable relation between the characters are connected between the variable relations and then displayed.

Furthermore, the data structure for browsing a video is based on a relation between characters and a variable relation between them. A key frame of an event period showing a corresponding relation between the characters clearly or directly, or a key frame of an event period showing it with hint or indirectly can be displayed based on the data structure. Also, the relations between the characters are divided into a family relation, a social relation, and an emotion relation to be selectively provided to a user, so that video browsing can be

performed based on the relations between the characters.

Accordingly, contents of the video can be browsed based on characters that significantly act on development of a story of a movie or drama, the relation between the characters, and the variable relation between them. After all, the user can easily browse the video based on characters, event and relation which are concerned in development of a story and important for contents of a real video. Also, the user can understand and browse a desired video in various types based on the video data structure which represents characters and their relation.

Furthermore, the present invention may be applied to a VOD system in the broadcasting field so that the user can view a desired part. This could lead to an advantage that the user can reproduce and view the desired part within short time and to effective utilization of the network source. Also, the present invention may be applied to a video player for home use and a broadcasting video player so that the video browsing environment can be provided to easily browse a desired part of a movie or drama stored in the video player.

The foregoing embodiments are merely exemplary and are not to be construed as limiting the present invention. The present teachings can be readily applied to other types of apparatuses. The description of the present invention is intended to be illustrative, and not to limit the scope of the claims. Many alternatives, modifications, and variations will be apparent to those skilled in the art.

WHAT IS CLAIMED IS:

1. A video browsing system comprising:

a character screen which displays characters of a video; and

5 a main screen which displays video segments corresponding to significant events showing a relation between two displayed characters of said character screen according to a user selection, wherein said relation may be constant or variable.

2. A system of claim 1, wherein the main screen displays said video segments by a summary data of said video segments.

3. A system of claim 1, wherein a user selects two characters through the character screen to display the video segments corresponding to significant events showing a relation between the two displayed characters.

4. A system of claim 1, further comprises a character relation-variable event screen which displays connections between variable relations and significant events.

5. A system of claim 4, wherein the character relation-variable event screen displays either one or both the variable relations and events by key frames.

6. A system of claim 1, further comprising:

a relation screen which displays constant relations and

variable relations between a character selected from the character screen and related characters, wherein said constant relations and variable relations are displayed in a tree structure; and

5 a main scene screen which displays significant events corresponding to one of either a constant relation or variable relation selected from the relation screen.

7. A system of claim 6, wherein the constant relation is displayed on a top level of said tree structure and variable relations are displayed on lower levels of said tree structure.

8. A system of claim 6, wherein the main scene screen displays the significant events by key frames.

9. A system of claim 6, further comprising a selection screen wherein the main scene screen displays either one or both main significant events or secondary significant events corresponding to said relation selected from the relation screen, according to a user selection through said selection screen.

10. A system of claim 6, further comprising a selection screen wherein the relation screen displays constant relations and variable relations corresponding a relation type selected by a user through said selection screen.

11. A system of claim 10, wherein a relation type may be one of a family relation, a business relation, or a social relation.

12. A video data structure for a video browsing system comprising:

5 a visualization DS which includes a highlight view DS for display for displaying event data by a highlight and a key frame view DS for displaying event data as key frames, wherein the highlight view DS is organized into multiple levels which enables a display of multi-levels of highlight data and wherein the key frame view DS is organized into multiple levels which enables a display of multi-levels of summarized data;

a syntactic structure DS which includes information for displaying actual video segments of a video; and

10 a semantic structure DS which includes additional information describing a video.

13. A video data structure of claim 12, wherein the syntactic structure DS is organized into a segment DS including actual video segment data and a time DS including corresponding temporal positions of each actual video segment data within a video data.

14. A video data structure of claim 13, wherein the semantic structure DS is organized into sub-level structures comprising:

an event DS which includes event information, wherein said

event DS is organized into sub-level structures of a reference to segment which includes reference information necessary for displaying a video segment of a video corresponding to events selected by a user and an annotation DS which includes information which connects said selected events with actual positions of said selected events within a video data and information explaining said selected events;

an object DS which includes object information; and

an event/relation graph DS which includes information on at least one of constant relations between objects, variable relations between objects, or relations between objects and events, wherein said event/object relation graph DS is organized into an entity relation with sub-level structures of a Reference to Object which connects objects having either a constant relation or variable relation, a Reference to Event which connects events which are significant to a relation between each connected objects, and a relation which includes information on a nature and title of relation between each connected objects.

15. A video browsing system comprising:

a character screen which displays characters of a video; and
a main screen which displays video segments corresponding to significant events showing a relation between two displayed characters of said character screen according to a user selection, wherein said relation may be constant or variable.

a relation screen which displays constant relations and

variable relations between a character selected from the character screen and related characters, wherein said constant relations and variable relations are displayed in a tree structure; and

5 a main scene screen which displays significant events corresponding to one of either a constant relation or variable relation selected from the relation screen.

16. A system of claim 15, wherein the constant relation is displayed on a top level of said tree structure and variable relations are displayed on lower levels of said tree structure.

17. A system of claim 15, wherein the character screen, the main screen, the relation screen, and the main scene screen are displayed using a video data structure comprising:

a visualization DS which includes a highlight view DS for display for displaying event data by a highlight and a key frame view DS for displaying event data as key frames, wherein the highlight view DS is organized into multiple levels which enables a display of multi-levels of highlight data and wherein the key frame view DS is organized into multiple levels which enables a display of multi-levels of summarized data;

a syntactic structure DS which includes information for displaying actual video segments of a video; and

a semantic structure DS which includes additional information describing a video.

18. A system of claim 15, further comprising a selection screen wherein the main scene screen displays either one or both main significant events or secondary significant events corresponding to said relation selected from the relation screen,
5 according to a user selection through said selection screen.

19. A system of claim 15, further comprising a selection screen wherein the relation screen displays constant relations and variable relations corresponding a relation type selected by a user through said selection screen.

20. A system of claim 19, wherein a relation type may be one of a family relation, a business relation, or a social relation.

ABSTRACT OF THE DISCLOSURE

A video data structure and a video browser for video browsing based on content is disclosed. The present invention allows users to easily understand relations between characters and changes in relations between characters in a movie or drama by displaying significant events in connection to corresponding relations and by displaying character relations in a tree structure.

24

FIG. 1

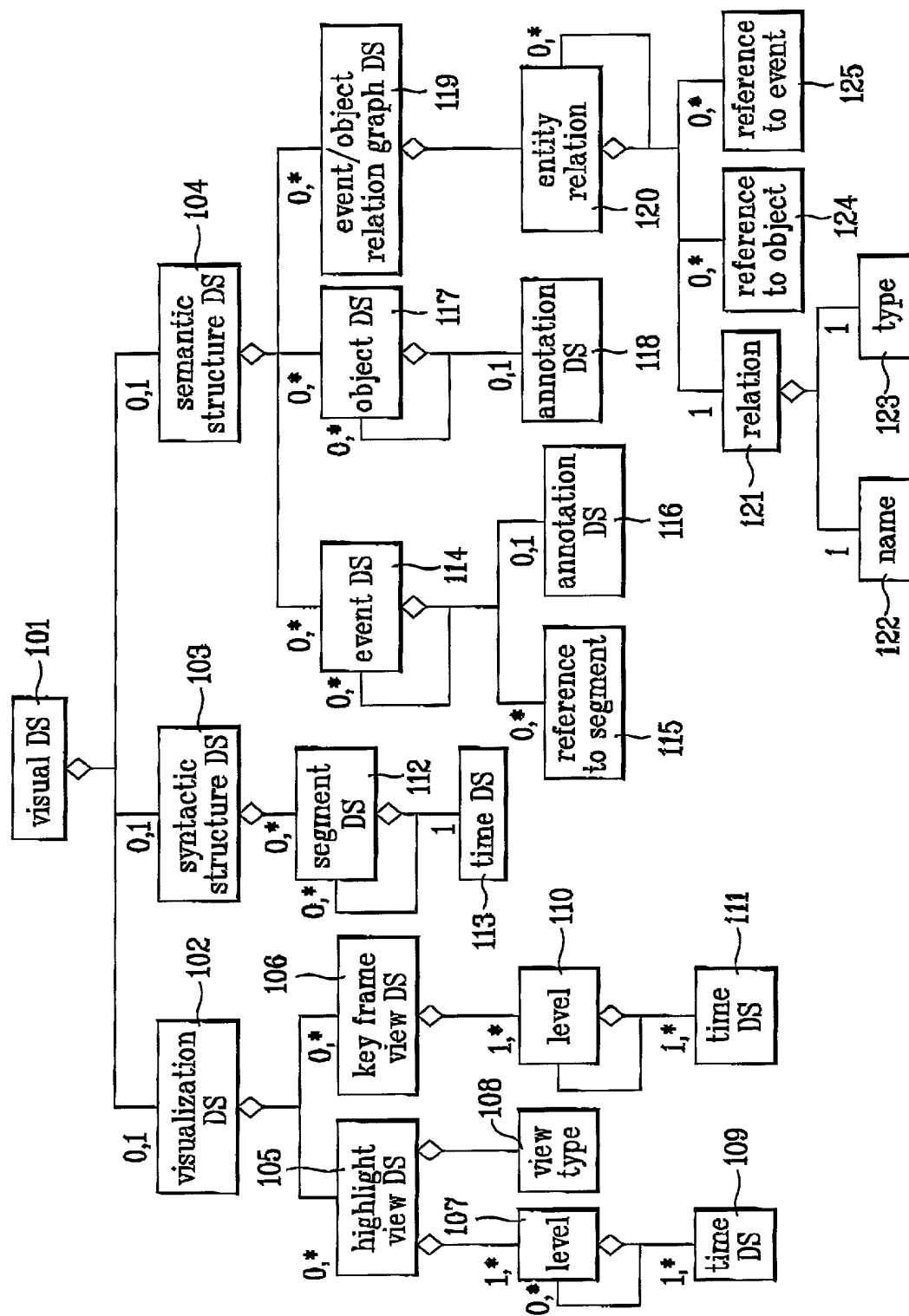


FIG.2

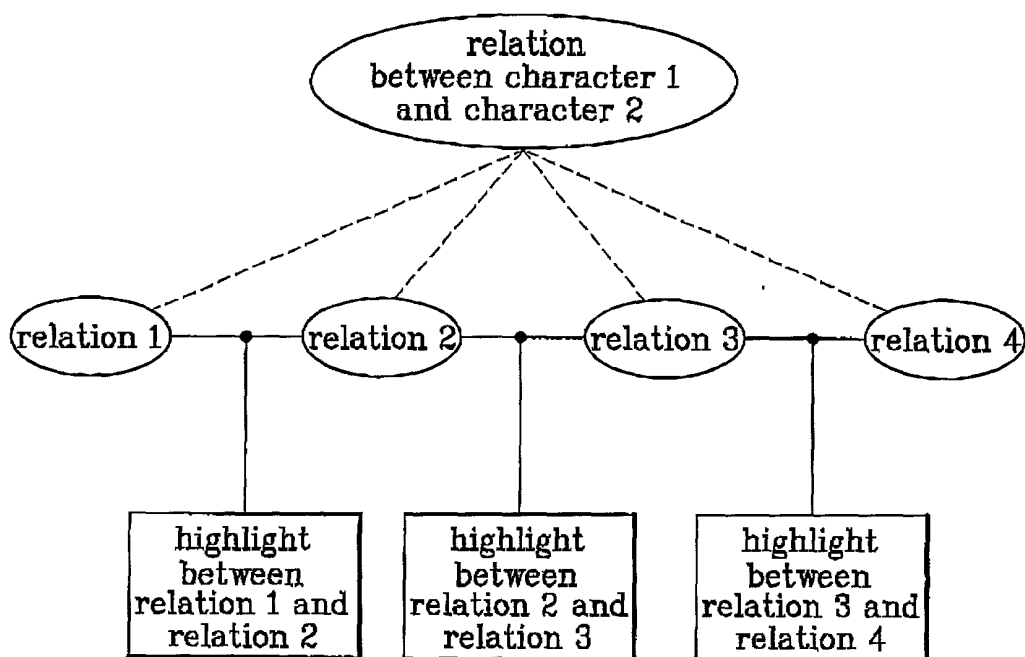


FIG. 3

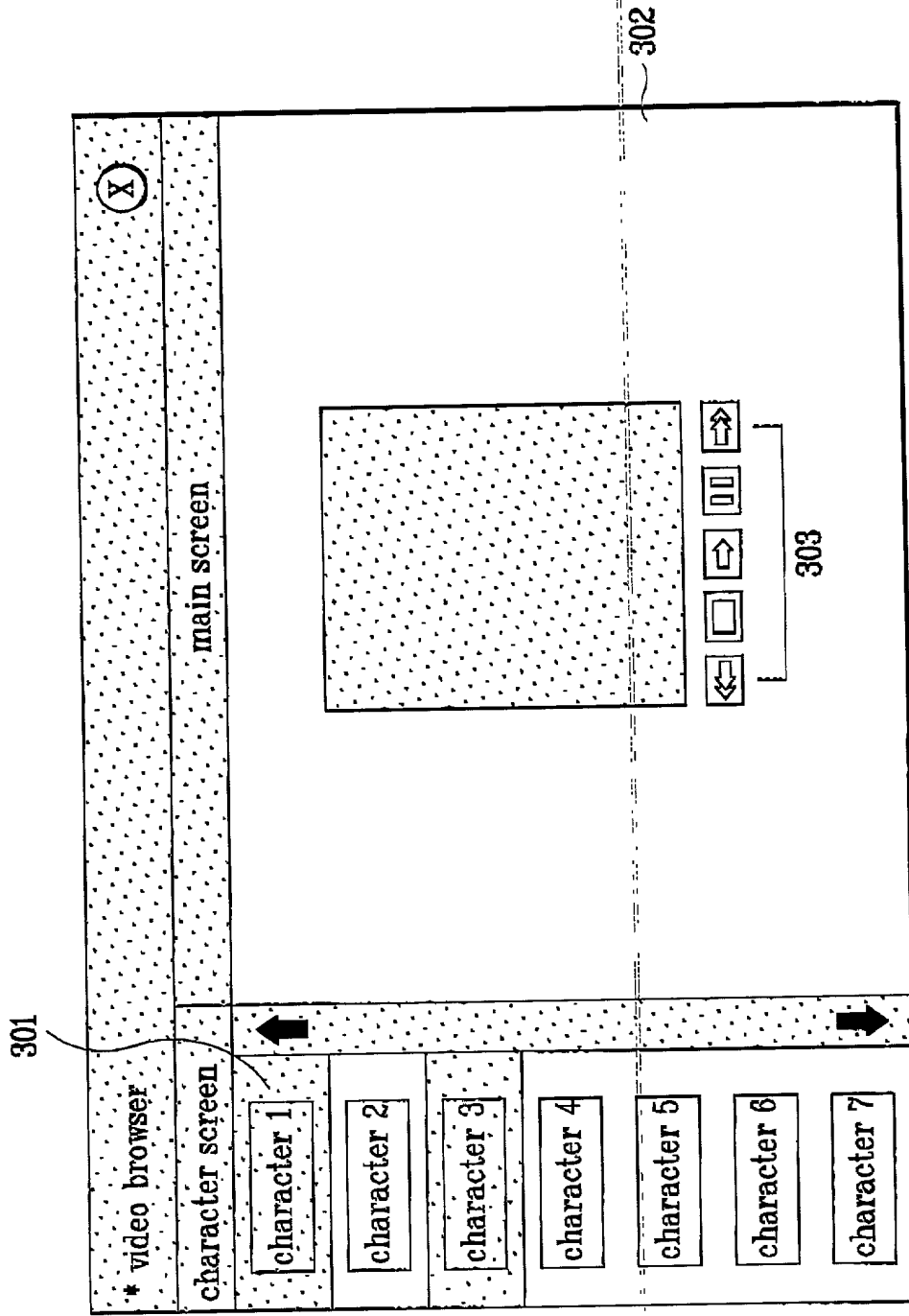


FIG. 4

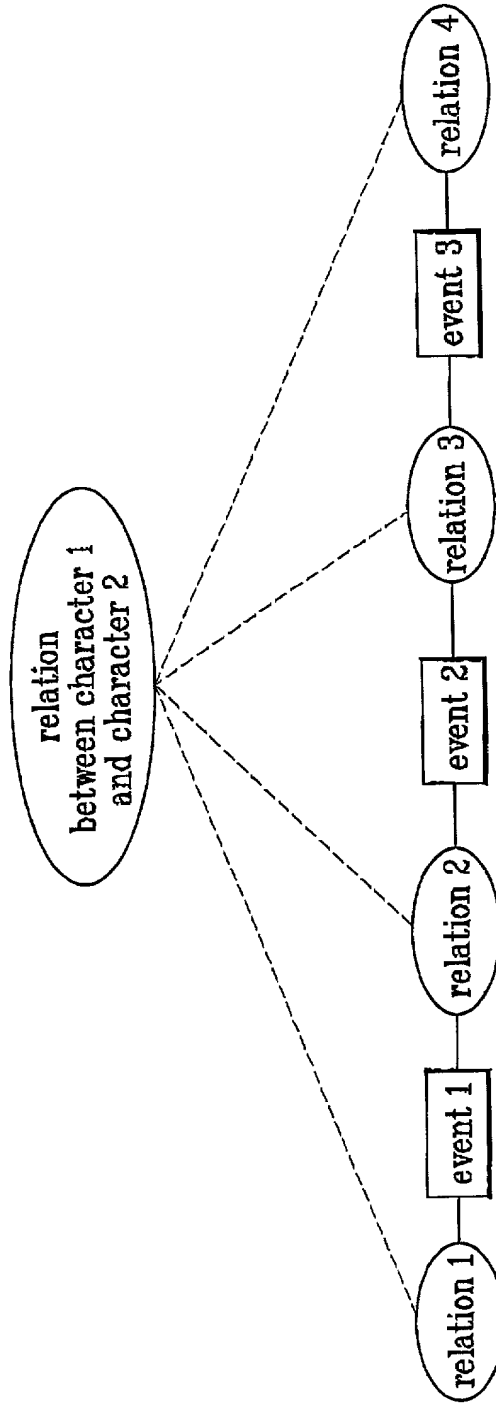


FIG. 5

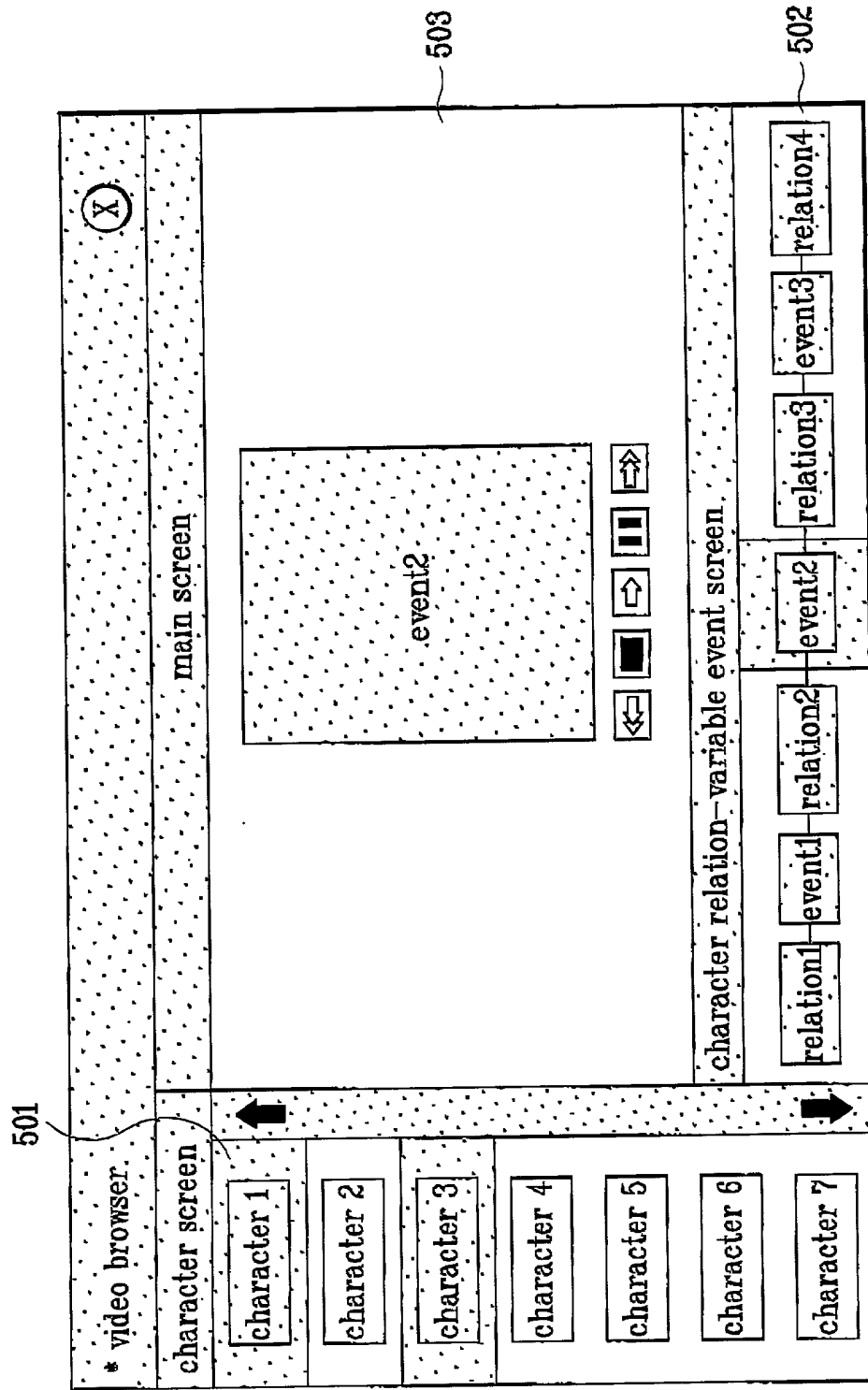


FIG. 6

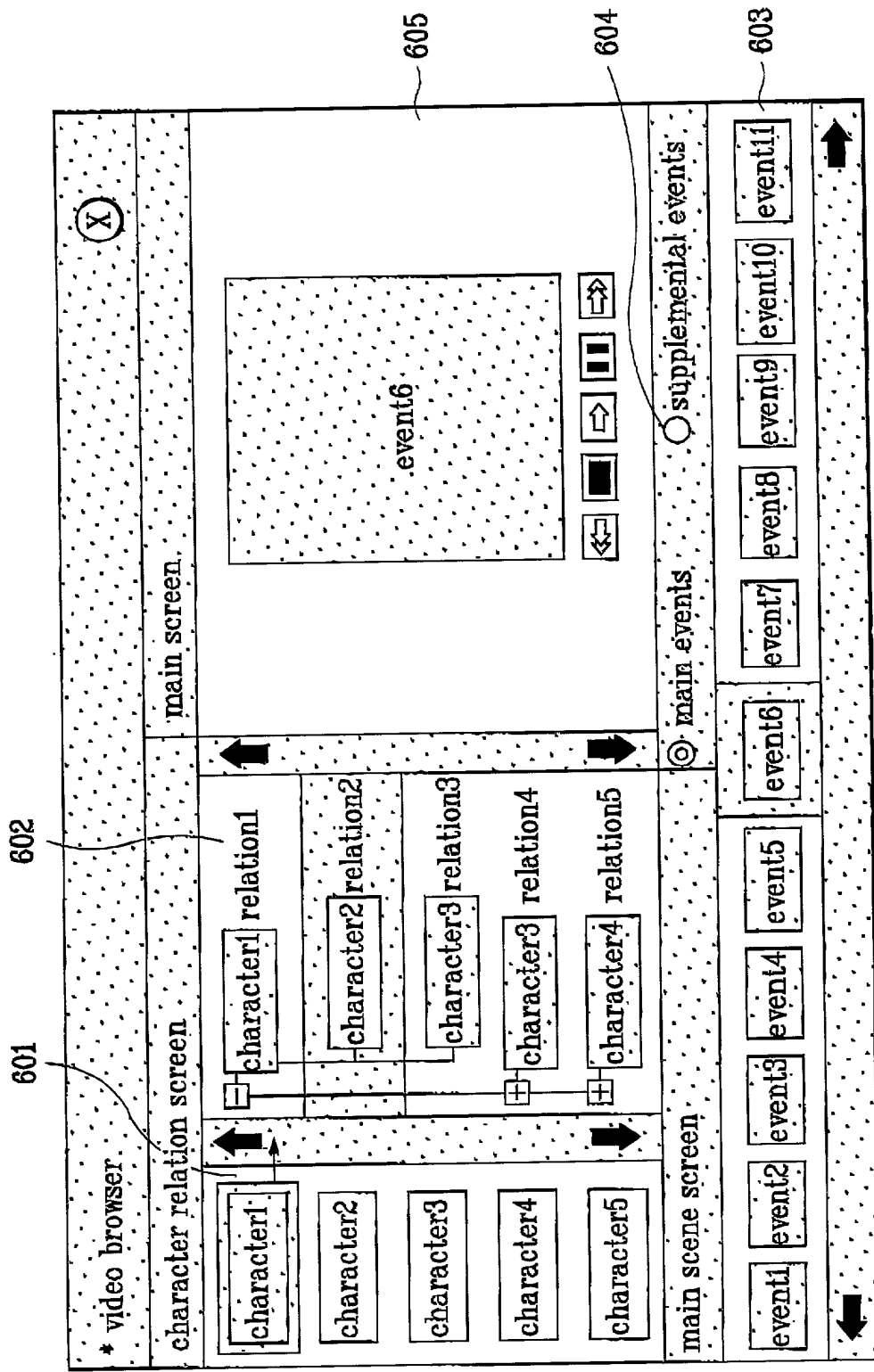
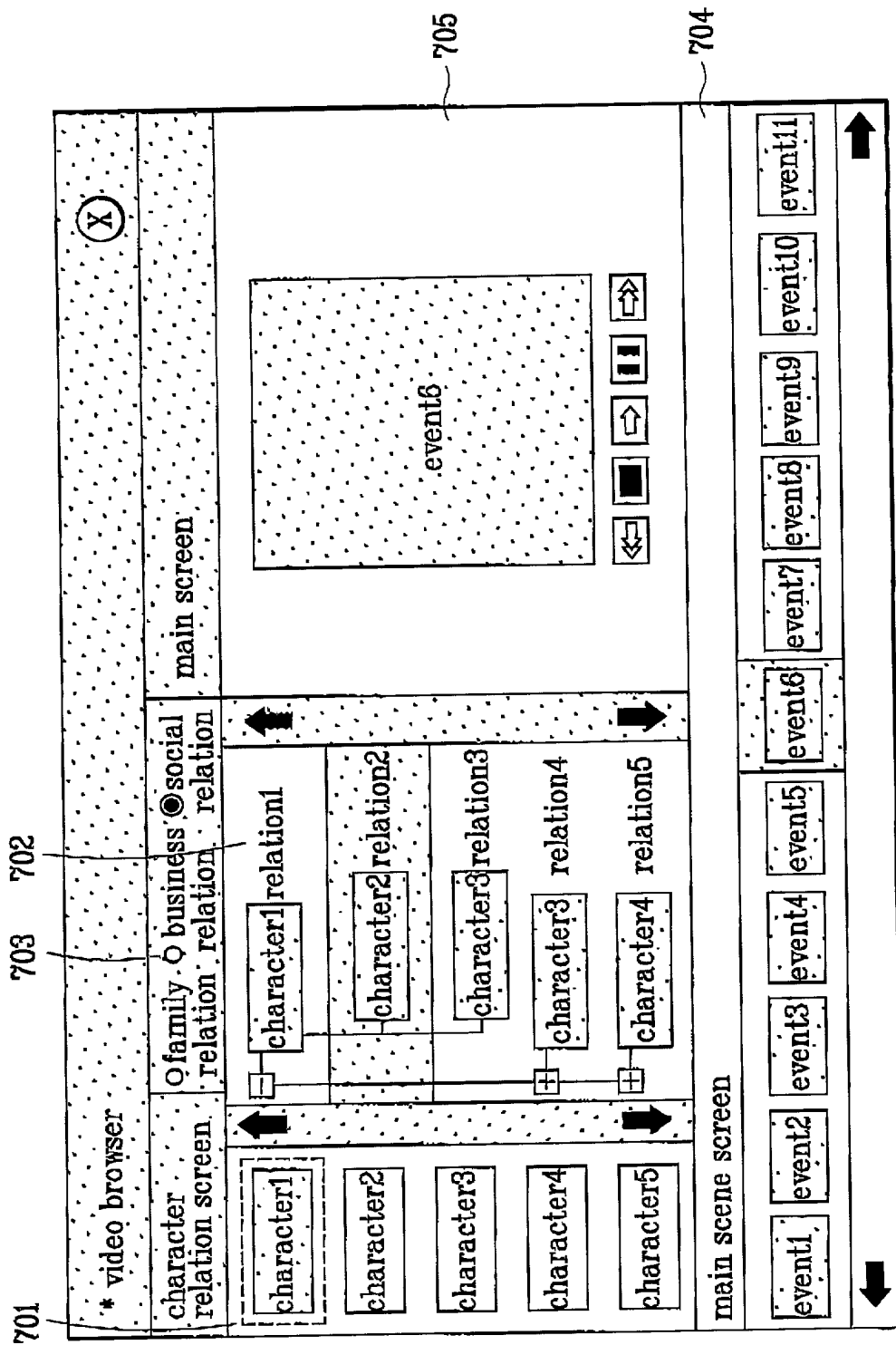


FIG. 7



Docket No.: _____

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office and citizenship are as stated below next to my name,

(I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter claimed and for which a patent is sought on the invention entitled _____

VIDEO BROWSER BASED ON CHARACTER RELATION _____, the

specification of which

[X] is attached hereto [] was filed on _____ as Application Serial No. _____ and was amended on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is known to me to be material to patentability in accordance with Title 37, Code of Federal Regulations, Section 1.56(a).

I hereby claim foreign priority or provisional application benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate, or provisional application(s) listed below and have also identified below any foreign application for patent or inventor's certificate, or provisional application(s) having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s) or U.S. Provisional Application(s):			Priority Claimed	
Number	Country	Day/Month/Year	Yes	No
35688/1999	Korea	August/26/1999	X	

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Prior U. S. Application(s):

Serial No.

Filing Date

Status: Patented, Pending, Abandoned

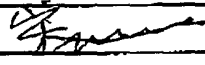
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorney(s) and/or agent(s): Daniel Y.J. Kim, Registration No. 36,186 and Mark L. Fleshner, Registration No. 34,596; Carl R. Wesolowski, Registration No. 40,372, John C. Eisenhart, Registration No. 38,128, Rene A. Vasquez, Registration No. 36,647, all of

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With full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and all future correspondence should be addressed to them.

Full name of sole or first inventor: Jung Min SONG

Inventor's signature: 

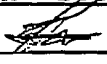
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